CLAIMS

What is claimed is:

1. A stent, comprising:

a tubular body having an outer surface for contacting the wall of a vessel and an inner surface;

a first coating supported by said inner surface and containing an angiogenic substance for the release of said angiogenic substance in said vessel; and

a second coating supported by said outer surface and containing a therapeutic substance for applying said therapeutic substance to said wall of said vessel.

2. The stent of Claim 1, wherein said first coating is different than said second coating.

3. The stent of Claim 1, wherein said therapeutic substance is selected from a group of antiproliferative, antineoplastic, antiinflammatory, antiplatelet, anticoagulant, antifibrin, antithrombin, antimitotic, antibiotic, antioxidant, and anti-migratory substances, inhibitors of matrix synthesis, and combinations thereof.

4. The stent of Claim 1, wherein said angiogenic substance is selected from a group of vascular endothelial growth factor (VEGF) in any of its multiple isoforms, fibroblast growth factors, monocyte chemoattractant protein 1 (MCP-1), transforming growth factor beta (TGF-beta) in any of its multiple isoforms, transforming growth factor alpha (TGF-alpha), lipid factors, hypoxia-inducible factor 1-alpha (HIF-1-alpha), PR39, del 1, nicotine, insulin-like growth factors, placental growth factor (PlGF), hepatocyte growth factor (HGF), estrogen, follistatin, proliferin, prostaglandin E1, prostaglandin E2, cytokines, tumor necrosis factor (TNF-alpha), erythropoietin, granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor (GM-CSF), angiogenin, hormones, and genes that encode such substances.

5. A stent for implanting in a blood vessel comprising a tubular structure having an inner surface and an outer surface, comprising:

a first therapeutic substance carried by the inner surface for being released downstream with the flow of blood; and

a second therapeutic substance, different from the first therapeutic substance, carried by the outer surface for application to the blood vessel wall,

wherein the first therapeutic substance facilitates therapeutic angiogenesis and wherein the second therapeutic substance inhibits migration or proliferation of smooth muscle cells.

6. The stent of Claim 5, wherein the inner surface has a first polymeric coating deposited thereon for the sustained release of the first therapeutic substance and wherein the outer surface has a second polymeric coating deposited thereon for the sustained release of the second therapeutic substance.

7. The stent of Claim 5, wherein the inner surface comprises a plurality of cavities for releasing the first therapeutic substance when exposed to the flow of blood.

8. The stent of Claim 5, wherein the inner surface comprises a plurality of cavities for releasing the first therapeutic substance when exposed to the flow of blood and wherein the outer surface comprises a plurality of cavities for applying the second therapeutic substance to the blood vessel wall.

9. The stent of Claim 5, wherein the first therapeutic substance is selected from a group of vascular endothelial growth factor (VEGF) in any of its multiple isoforms, fibroblast growth factors, monocyte chemoattractant protein 1 (MCP-1), transforming growth factor beta (TGF-beta) in any of its multiple isoforms, transforming growth factor alpha (TGF-alpha), lipid factors, hypoxia-inducible factor 1-alpha (HIF-1-alpha), PR39, del 1, nicotine, insulin-like growth factors, placental growth factor (PlGF), hepatocyte growth factor (HGF), estrogen, follistatin, proliferin,

prostaglandin E1, prostaglandin E2, cytokines, tumor necrosis factor (TNF-alpha), erythropoietin, granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor (GM-CSF), angiogenin, hormones, and genes that encode such substances.

10. The stent of Claim 5, wherein the second therapeutic substance is selected from a group of actinomycin D, docetaxel and paclitaxel.

11. A method for increasing blood flow to ischemic tissues located downstream from an occluded region in a blood vessel, comprising:

implanting a stent in the blood vessel at a location upstream from the ischemic tissues, the stent having an inner surface carrying an angiogenic substance.

12. The method of Claim 11, wherein the stent is implanted at a location upstream of the occluded region.

13. The method of Claim 12, wherein the stent is made of a bioabsorbable material.

14. The method of Claim 11, wherein the stent is implanted across at least a portion of the occluded region.

15. The method of Claim 11, wherein the inner surface supports a coating containing the angiogenic substance.

16. The method of Claim 11, wherein the inner surface includes cavities containing the angiogenic substance.

17. The method of Claim 11, wherein the angiogenic substance is selected from a group of vascular endothelial growth factor (VEGF) in any of its multiple isoforms, fibroblast growth factors, monocyte chemoattractant protein 1 (MCP-1), transforming growth factor beta (TGF-beta) in any of its multiple isoforms, transforming growth factor alpha (TGF-alpha), lipid factors, hypoxia-inducible factor 1-alpha (HIF-1-alpha), PR39, del 1, nicotine, insulin-like growth factors, placental growth factor (PlGF), hepatocyte growth factor (HGF), estrogen, follistatin, proliferin, prostaglandin E1, prostaglandin E2, cytokines, tumor necrosis factor (TNF-alpha), erythropoietin, granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor (GM-CSF), angiogenin, hormones, and genes that encode such substances.

18. The method of Claim 11, wherein the stent additionally includes a coating disposed on the outer surface of the stent, the coating carrying a therapeutic substance.

19. The method of Claim 18, wherein the therapeutic substance is selected from a group of actinomycin D, docetaxel and paclitaxel.

20. The method of Claim 11, wherein the stent comprises cavities on the outer surface containing a therapeutic substance.

21. The method of Claim 11, wherein the blood vessel is located in mammalian coronary vasculature.

22. The method of Claim 11, wherein the blood vessel is located in mammalian peripheral vasculature.